The Federation of the Church Schools of Shalfleet and Yarmouth

Foundation Plans, Progression and Coverage

SCIENCE	Links to EYFS	Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Knowledge	- Knowing similarities and differences in relation to places, objects, materials and living things. - Knowing features of their own immediate environment and how environments might vary from one another. - To make observations of animals and plants, explaining why some things occur and talk about changes.	**Plants** - To be able to identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. - To be able to identify and describe the basic structure of a variety of common flowering plants, including trees. **Animals including humans** - To be able to identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals - To be able to identify and name a variety of common animals that are carnivores, herbivores and omnivores - To be able to describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) - To be able to identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense **Everyday Materials** - To be able to distinguish between an object and the material from which it is made - To be able to identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock - To be able to describe the simple physical properties of	**All living things and their habitats** - To be able to explore and compare the differences between things that are living, dead, and things that have never been alive - To be able to identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other - To be able to identify and name a variety of plants and animals in their habitats, including micro-habitats - To be able to describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. **Plants** - To be able to observe and describe how seeds and bulbs grow into mature plants - To be able to find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. **Animals, including humans** - To be able to notice that animals, including humans, have offspring which grow into adults - To be able to find out about and describe the	**Plants** - To be able to identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers - To be able to explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant - To be able to investigate the way in which water is transported within plants - To be able to explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. **Animals, including humans** - To be able to identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat - To be able to identify that humans and some other animals have skeletons and muscles for support, protection and movement. **Rocks** - To be able to compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	**Living things and their habitats** - To be able to recognise that living things can be grouped in a variety of ways - To be able to explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment - To be able to recognise that environments can change and that this can sometimes pose dangers to living things. **Animals, including humans** - To be able to describe the simple functions of the basic parts of the digestive system in humans - To be able to identify the different types of teeth in humans and their simple functions - To be able to construct and interpret a variety of food chains, identifying producers, predators and prey. **States of matter** - To be able to compare and group materials together, according to whether they are solids, liquids or gases - To be able to observe that some materials change state when they are heated or cooled, and measure or research the	**Living things and their habitats** - To be able to describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird - To be able to describe the life process of reproduction in some plants and animals. **Animals, including humans** - To be able to describe the changes as humans develop to old age. **Properties and changes of materials** - To be able to compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets - I know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution - To be able to use knowledge of solids,	**Living things and their habitats** - To be able to describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals - To be able to give reasons for classifying plants and animals based on specific characteristics. **Animals, including humans** - To be able to identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood - To be able to recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function - To be able to describe the ways in which nutrients and water are transported within animals, including humans. **Evolution and inheritance** - To be able to recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago - To be able to recognise that living things produce

		a variety of everyday materials - To be able to compare and group together a variety of everyday materials based on their simple physical properties. **Seasonal Changes** - To be able to observe changes across the four seasons - To be able to observe and describe weather associated with the seasons and how day length varies.	basic needs of animals, including humans, for survival (water, food and air) - To be able to describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. **Uses of everyday materials** - To be able to identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses - To be able to find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	- To be able to describe in simple terms how fossils are formed when things that have lived are trapped within rock - To be able to recognise that soils are made from rocks and organic matter. **Light** - To be able to recognise that they need light in order to see things and that dark is the absence of light - To be able to notice that light is reflected from surfaces - To be able to recognise that light from the sun can be dangerous and that there are ways to protect their eyes - To be able to recognise that shadows are formed when the light from a light source is blocked by a solid object - To be able to find patterns in the way that the size of shadows change. **Forces and magnets** - To be able to compare how things move on different surfaces - To be able to notice that some forces need contact between two objects, but magnetic forces can act at a distance - To be able to observe how magnets attract or repel each other and attract some materials and not others describe magnets as having two poles - To be able to predict whether two magnets will attract or repel each other, depending on which poles are facing. - To be able to compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials	temperature at which this happens in degrees Celsius (°C) - To be able to identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. **Sound** - To be able to identify how sounds are made, associating some of them with something vibrating - To be able to recognise that vibrations from sounds travel through a medium to the ear - To be able to find patterns between the pitch of a sound and features of the object that produced it - To be able to find patterns between the volume of a sound and the strength of the vibrations that produced it - To be able to recognise that sounds get fainter as the distance from the sound source increases. **Electricity** - To be able to identify common appliances that run on electricity - To be able to construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers - To be able to identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery - To be able to recognise that a switch opens and	liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating - To be able to give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic - To be able to demonstrate that dissolving, mixing and changes of state are reversible changes - To be able to explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. **Earth and Space** - To be able to describe the movement of the Earth, and other planets, relative to the Sun in the solar system - To be able to describe the movement of the Moon relative to the Earth - To be able to describe the Sun, Earth and Moon as approximately spherical bodies - To be able to use the idea of the Earth's rotation to	offspring of the same kind, but normally offspring vary and are not identical to their parents - To be able to identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. **Light** - To be able to use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye - To be able to explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes - To be able to use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. **Electricity** - To be able to associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit - To be able to compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches - To be able to use recognised symbols when representing a simple circuit in a diagram.

					closes a circuit and associate this with whether or not a lamp lights in a simple series circuit - To be able to recognise some common conductors and insulators, and associate metals with being good conductors.	explain day and night and the apparent movement of the sun across the sky. **Forces** - To be able to explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object - To be able to identify the effects of air resistance, water resistance and friction, that act between moving surfaces - To be able to recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	
Skills (Investigations) - To run as a thread throughout all scientific work.	- Enquiry skills. - Questioning skills – asking and responding to questions posed. - Exploration and observational skills – using first hand experience and secondary sources to explore and gather information to answer to question.	- Asking simple questions and recognising that they can be answered in different ways - Observing closely, using simple equipment - Performing simple tests - Identifying and classifying - Using their observations and ideas to suggest answers to questions - Gathering and recording data to help in answering questions.		- Asking relevant questions and using different types of scientific enquiries to answer them - Setting up simple practical enquiries, comparative and fair tests - Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers - Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions - Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables - Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions - Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions - Identifying differences, similarities or changes related to simple scientific ideas and processes - Using straightforward scientific evidence to answer questions or to support their findings.		- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary - Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate - Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs - Using test results to make predictions to set up further comparative and fair tests - Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations - Identifying scientific evidence that has been used to support or refute ideas or arguments.

Vocabulary	- Environment - Living things - Materials - Change - Animal - Plant - Observation - Feature - Similarity - Difference	Working scientifically – question, answer, observe, observing, equipment, identify, classify, sort, diagram, chart, map, data, compare, contrast, describe, biology, chemistry, physics, group, record. Plants – wild plants, garden plants, deciduous, evergreen, tree, plant, bud, root, bulb, seed, stem, blossom, petal, growth. Animals including humans – habitat, food chain, living, dead, amphibian, reptile, mammal, bird, fish, carnivore, herbivore, omnivore, survive, human and animal body parts, animal names. Everyday materials – wood, plastic, glass, metal, water, rock, hard, soft, stretchy, stiff, twist, push, pull, rough, smooth, bendy, waterproof, absorbent, brick, paper, fabric, elastic, foil, properties, rigid, flexible. Seasonal changes – summer, spring, autumn, winter, seasons, weather, difference	Working scientifically – as Year 1. Plants – water, light, temperature, grow, healthy, germination, reproduction. Animals including humans – adult, nutrition, survival, reproduce, lifecycle, grow, hygiene, exercise, water, food, air, and further animal names. Living things and their habitat – micro-habitat, food chain, healthy, seashore, woodland, shelter, ocean, rainforest, conditions. Everyday materials – cardboard, squashing, bending, twisting, types of metal objects, types of wooden objects, types of spoons (not glass), opaque, translucent, transparent.	Working scientifically – Research – relevant, scientific enquiry, comparative and fair test, systematic, careful observation, accurate, measurements. Equipment – thermometer, data logger, Data – gather, record, classify, present. Record – drawings, labelled diagrams, keys, bar charts, tables, oral and written explanations, conclusions, predictions, differences, similarities, changes, evidence, improve, secondary sources, guides, construct, interpret. Plants – functions, flowering plants, structure, nutrient, transported, fertiliser, pollination, seed formation and seed dispersal. Animals including humans – food groups – carbohydrate, fat, protein, vitamins, nutrients, minerals, fibre, fruit and vegetables, diet. Skeleton (common names for bones and major organs), protection, support, structure, joint, cartilage, muscles, movement, pull, contract and relax. Rocks – igneous, sedimentary, metamorphic, fossil, appearance, physical, organic matter, absorbent, non-absorbent, grains, crystal. Mary Anning. Light – reflection, dark is the absence of light, dangerous, shadow, spectrum, natural, artificial, surface, blocked, light source, straight, protect, patterns Forces and magnets – attract, repel, magnetism, magnetic, non-magnetic, magnetic field, poles, north, south, strength, surface, cobalt, iron, metal, aluminium, tin.	Working scientifically – as Year 3. Living things and their habitats – moss, nature reserve, fern, population, human impact, development, litter, deforestation, vertebrate, invertebrate. Animals including humans – human digestive system, tongue, saliva, oesophagus, stomach, acid, enzymes, intestines (small and large), waste product, faeces, anus, transport, teeth, incisors, canines, molars, grind, tearing, ripping, chewing, slicing, predators, prey. States of matter – solid, melt, freeze, liquid, evaporate, condense, gas, container, changing state, degrees Celsius, thermometer, temperature, water cycle, condensation, water vapour. Sound – vibrate, vibration, vibrating, air, medium, volume, pitch, faint, loudness, string, percussion, brass, insulate, woodwind, patterns, strength, distance, waves. Electricity – circuit, cells, wires, bulbs, switches, buzzers, lamp, battery, motor, voltage, loop, switch, series circuit, brightness, conductor, insulator, common, open circuit, closed circuit,	Working scientifically – Plan, variables, measurements, accuracy, precision, repeat readings, Record data – scientific diagrams, labels, classification keys, scatter graphs, bar graph and line graph, further comparative and fair test, casual relationships, degree of trust. Evidence – support, refute ideas or arguments, identify, classify and describe, patterns, systematic. Living things and their habitats – reproduction, plants – sexual and asexual prehistoric. Animals including humans – puberty, lifecycle, gestation, growth, foetus, fertilisation, length, mass, life expectancy, adolescence, adulthood, childhood. Properties and changes of materials – transparency, conductive, electrical and thermal, dissolve, solution, filtering, sieving, evaporating, reversible changes, irreversible changes, chemists, quantitative measurements, conductivity and insulation. Earth and Space – Earth, sun, moon, astronomy, telescope, planets (names), planet, solar system, rotate, orbit, axis, spherical, heliocentric, geocentric, hemisphere, season tilt, Aristotle, Ptolemy, Galileo, Copernicus, Brahe, Alhazem. Forces – air resistance, water resistance, gravity, theory of gravitation, accelerate, friction, decelerate and accelerate,	Working scientifically – as Year 5. Living Things and their habitats – micro-organisms, classification, Animals including humans – heart, lungs, liver, brain, kidney, skeletal, muscular, blood vessels, human circulatory system, impact, damage (alcohol/substances). Evolution and inheritance – inherited traits, adaptive traits, natural selection, offspring, vary, non identical, characteristics, genes, DNA, evolution, adaption, inherit, fossilisation, environment, Charles Darwin, palaeontology, Light – periscope, filters. Electricity – consolidate vocabulary learnt so far.

						direction, mechanism, pulley, gear, spring, break, Isaac Newton.	
Resources – Including link to Reading	- Outdoor classroom - Non-fiction and fiction books - Whole class internet use to research and find images - Pens and other recording materials - iPads for pictures - Reading labels and captions - Consumables - Visits	- Outdoor classroom - Animal pictures/models - Online research - Book research - Online videos - Posters - Outside visitors - Material samples - Everyday objects using curriculum specific materials - iPads for pictures - Magnifying glasses - Consumables - Visits	- Outdoor classroom - Animal pictures/models - Online research - Book research - Online videos - Posters - Outside visitors - Material samples - Everyday objects using curriculum specific materials - iPads for pictures - Magnifying glasses - Gardening equipment - Seeds and bulbs - Consumables - Visits	- Outdoor classroom - Seeds and bulbs - Plant diagrams - Animal pictures/models - Online research - Book research - Online videos - Posters - Outside visitors - iPads for pictures - Different rock samples - Torches - Mirrors - Magnets - Magnetic/non-magnetic objects - Everyday objects/materials using curriculum specific materials. - iPads for pictures - Skeleton model - Consumables - Dark tent - Visits	- Animal internal pictures/models - Teeth pictures/models - Online research - Book research - Online videos - Posters - Outside visitors - iPads for pictures - Musical instruments - iPads for pictures - Data logger - Apps relevant to sound and light capture - Thermometer - Examples of different liquids, gases and solids - Digital scales - Electrical circuit kit - Bulbs and batteries - Tape measure - Heating and cooling equipment - Consumables - Visits	- Lifecycle pictures - Outdoor classroom - Diagrams of reproduction - Online research - Book research - Online videos - Posters - Outside visitors - iPads for pictures - Data logger - Thermometer - Examples of different liquids, gases and solids - Digital scales - Electrical circuit kit - Bulbs and batteries - Tape measure - Heating and cooling equipment - Filter paper - Sieve - Solar system model - Space camp equipment - Torches - Lever - Pulleys - Gears - Water tray - Stop watch - Consumables - Visits	- Outdoor classroom - Pictures of humans, animals and micro-organisms - Animal organs for dissection - Scalpel - Model/pictures of the human circulatory system - Online research - Book research - Online videos - Posters - Outside visitors - iPads for pictures - Data logger - Digital scales - Electrical circuit kit - Bulbs and batteries - Tape measure - Torches - Mirrors - Stop watch - Consumables - Visits